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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/709,287 | 04/27/2004 | Shunji NAKATA | 010704A | 3286 |
| 23850 | 7590 | 01/13/2005 | EXAMINER | |
| ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006 | | | | COX, CASSANDRA F |
| ART UNIT | | PAPER NUMBER | | |
| | | 2816 | | |

DATE MAILED: 01/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------------------|--------------------------------------|
| Office Action Summary | Application No. 10/709,287 | Applicant(s) NAKATA ET AL. |
| | Examiner Cassandra Cox | Art Unit 2816 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 27 April 2004 .

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-3 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-3 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 27 April 2004 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 04/29/04 . 6) Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al. (U.S. Patent No. 5,994,935) in view of Nakata et al. ("A Low Power Multiplier Using Adiabatic Charging Binary Decision Diagram Circuit", Extended Abstracts of the 1999 International Conference on Solid State Devices and Materials, Tokyo, 1999, pages 444-445.

In reference to claim 1, Ueda discloses in Figure 1, a register circuit (which is seen to be the same as the flip-flop circuit) having a plurality of n-channel MOSFET transistors (MN1-MN10) and a plurality of p-channel MOSFET transistors (MP1-MP4), accepting an input data (DI, DIB), and a clock signal (CK, CKB), and providing an output data (DO, DOB), the clock signal (CK, CKB) being a power clock signal having a stepwise waveform (the limitation "or sine waveform from an LC resonant circuit" is not being addressed at this time because it is only necessary that the examiner satisfy one of the conditions of the claim), wherein the register circuit (flip-flop circuit) comprises two latch circuits (which are seen to be D-latch circuits) with an input of a second D-latch circuit coupled with an output of a first D-latch circuit (which is seen to be the cascade connection of the two latches), a first D-latch circuit accepts a first power clock signal

(CK), and a second D-latch circuit accepts a second power clock signal (CKB) which is different by 180° phase of the first power clock signal (which can be seen in Figure 2B), see the ABSTRACT of Ueda. Ueda does not disclose that a switched capacitor regenerator is used to generate the clock signal. Nakata discloses that it is well-known that a switched capacitor regenerator (see Figure 4) can be used to generate the power clock signal in which power supplied to a load is partially collected and returned to the charge recycle power source, and the inequality ($|V_{TN}| + |V_{TP}| \geq VDD$) is satisfied. It would have been obvious to one of skill in the art at the time of the invention that the well known switched capacitor regenerator of Nakata could be used in association with the register circuit of Ueda as a means of generating the required clock signals. Since Ueda does not disclose a particular means for generating the clock signals (CK, CKB) any waveform generator could be used and the switched capacitor regenerator is one example of such.

In reference to claim 2, applicant also discloses in the admitted prior art (see Figure 17) a D-latch circuit (70) comprising a pair of NOR circuits (71, 72) with one of the inputs of each NOR circuit (71, 72) being coupled with an output of the other NOR circuit (71, 72), and a pair of AND circuits (73, 74) each accepting an input data (D, DN) in differential form and a power clock signal (CK), and providing an output to the other input of each of the NOR circuits (71, 72). This is seen to be an alternate method of designing a D-latch circuit that is well known to one of ordinary skill in the art.

In reference to claim 3, Ueda discloses in Figure 12, a well-known latch circuit comprising a memory element having a first inverter (INV1) providing an output (DO) of

the D-latch circuit, a second inverter (INV2) with an input coupled (through transmission gate TG3) with an output of the first inverter (INV1), and a first transmission gate (TG4) connecting an output of the second inverter (INV2) to an input of the first inverter (INV1), and a second transmission gate (TG2) inserted between an input terminal (DIB) and an input of the first inverter (INV1).

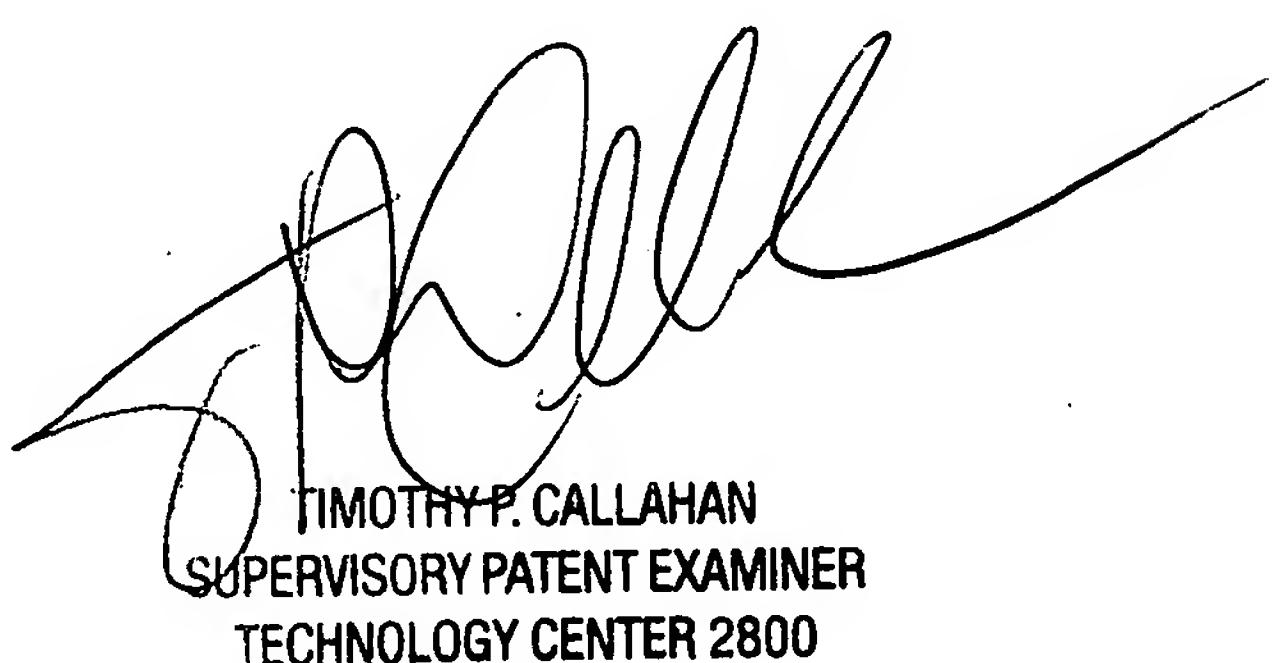
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cassandra Cox whose telephone number is 571-272-1741. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and on alternate Fridays from 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on 571-272-1740. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

CC
January 7, 2005



TIMOTHY P. CALLAHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800